Formal Matters

The title has been changed to clearly indicate that the invention is directed to resin compositions containing a reducing agent to be used in a multi-laminate for storing liquid foods.

The specification has been modified as requested by the Examiner to clarify and correct minor errors. No new matter or new issues are contained in these amendments.

Rejections Under 35 U.S.C. § 112, first paragraph

The Amendment on page 2, line 20 was rejected under 35 U.S.C. §112, first paragraph, as containing subject matter not in the specification as originally filed. Specifically, the proposed amendment reads on a composition comprising an optional porous inorganic compound, whereas the originally filed specification required the inorganic compound be present. Applicants respectfully traverse this rejection.

The original specification, page 3, lines 1 – 8 describes two embodiments of the invention of the above-referenced application. One embodiment described on page 3, lines 4 – 8, includes a porous inorganic compound. Since this is a component of only one of the two embodiments of the invention, and which are similar to each other in all other respects, inclusion of a porous inorganic compound is an optional feature, and therefore described as such in the Specification as originally filed. Applicants therefore respectfully request that this rejection be withdrawn.

The amendment on page 9, line 15, was rejected under 35 U.S.C. §112, first paragraph, as unclear as the meaning of the phrase "filled together." The clause "or the composition can be wrapped by another appropriate compound and be filled together" has now been amended to clarify that the composition of the invention may be wrapped in another appropriate composition and this combination molded to form a container that may be filed with liquid food. Applicants therefore respectfully request that this rejection be withdrawn.

Rejection Under 35 U.S.C. § 112, second paragraph

Claims 1 and 3 were rejected under 35 U.S.C. 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as the invention. The Office Action indicates that the phrase "which is then" is indefinite. It is unclear what part of the composition is dispersed in the hydrophobic thermoplastic resin. The Claims 1 and 3 have now been amended. The amendments to the claims clarify that it is the kneaded hydrophilic reducing organic compound and water insoluble thermoplastic resin composition that is dispersed in the hydrophobic thermoplastic resin. Therefore, Applicants respectfully request that the rejection be withdrawn.

Prior Art Rejections Under 35 U.S.C. § 103

None of the cited references teach the unique concept of this invention that ffers significant advantages over existing laminates and materials containing oxygen scavengers. No combination of the references teaches the protective function of the hydrophilic water insoluble thermoplastic resin that acts as the gas barrier. Cited references do not teach an advantage of the invention which is that the organic reducing agent is protected from oxygen until the hydrophilic layer is wetted by the aqueous food.

The Examiner rejected the argument presented by the Applicants in the Response dated August 5, 1999 on the grounds that one of ordinary skill in the art would expect the oxygen absorbing characteristics of component A to increase when the resin composition of the present invention comes into contact with the aqueous food. (Office Action page 9, lines 6 – 9). The inclusion of the hydrophilic layer component B, however, does not serve to diminish the oxygen absorbing characteristics of component A, which remain unaffected by the presence of the overlying component B. Instead, component B serves to protect and conserve the oxygen absorbing properties of the organic reducing agent (component A) until such time as oxygen can permeate the component B, when component B is wetted by the food. The protective functi n f the component B is a unique advantage of the present invention not suggested by the cit d references or any of their combinations, none of which teach this protective function.

The present invention fulfills a long-felt need for an improved laminate for food storage that contains an organic reducing agent and a hydrophilic gas barrier activated by placing the food therein. The advantage of this unique combination is that the gas barrier is a hydrophilic layer (See Attachment, component B) that surrounds the organic reducing agent oxygen

scavenger, thereby pr tecting the scavenger from oxygen and pr longing the effective life of the reducing agent. Once in contact with aqueous foods, the pr tective hydrophilic gas barrier is wetted and oxygen permeates to encounter the underlying organic reducing agent oxygen scavenger.

Thus, an important feature of the invention as indicated in the claims is that a hydrophilic reducing organic component (component A) is included in a hydrophilic and water insoluble thermoplastic resin (component B). In other words, the B component covers the A component. The A component is kneaded with the B component of the present invention. This process of kneading will allow the B component to surround the A component so that the A component is protected by the B component, which has oxygen gas barrier characteristics. This concept is shown in Exhibit A. This feature is supported by the specification on page 6, lines 1 – 12, page 12, line 1 and on page 12, lines 7 – 8. ***A is prevented from being consumed by the surrounding oxygen before the resin composition contacts the aqueous liquid food. Therefore, the A component maintains its oxygen absorbing capability.*** When the resin composition contacts the aqueous liquid food, the water component gradually reaches through the C component and decreases the oxygen barrier characteristics of component B. As a result, the A component can then exhibit its oxygen absorbing function (page 12 lines 1-14). Applicants respectfully affirm that these above-mentioned features and ***advantages*** of Claims 1, 3, 20 and 21 are ***neither disclosed nor suggested in any references*** cited by the Examiner.

An important feature of the invention according to Claims 14 and 15 is that a porous inorganic compound (D component) containing ascorbic acid (A component) is dispersed into hydrophobic thermoplastic resin (C component). In other words, this feature is the combination of the A/D component, the B component and the C component.

An advantage of the above feature of the Claims 14 and 15 is that when the D component containing the A component is dispersed in the C component, the A component is uniformly dispersed in the C component. As a result, the oxygen absorbing function of the A component is improved in the C component. This is supported in the Specification on page 12, lines 8 – 10. It should also be noted that the ascorbic acids have a tendency to aggregate to form solids. Thus, if the ascorbic acids are dispersed in the C component without the support of the D component, the ascorbic acids will aggregate, and the rate of dispersion of the ascorbic acids in the resin and their capacity for oxygen are significantly reduced.

This feature and advantage of the invention as claimed in Claims 14 and 15 are neither disclosed nor suggested in any references cited by the Examiner. **The cited references f Blinka and Daiichi-Seiyaku teach the combination of an oxygen scavenger such as ascorbate, and zeolite. Blinka, however, teaches zeolite merely in the same film as the ascorbate. Its function therein, to remove malodorous byproducts of oxygen scavenger activity, is fundamentally different from that of Daiichi-Seiyaku. There, the zeolite absorbs the ascorbate and retains it until such time as the ascorbate is released, i.e. leaves the zeolite, and passes into the food. The present invention departs radically from both these cited references. In the present invention ascorbate remains absorbed to zeolite and does not enter the food within the container. The zeolite, therefore, is a support medium to prevent self-aggregation of the ascorbate organic reducing agent.**

A. Claims 1, 3 and 5-8 were rejected under 35 U.S.C. § 103(a) as being obvious and unpatentable over Koyama et al. (Pat. No. 5,274,024) in view of Blinka et al. (Pat. No. 5,834,079). Also, the Examiner indicates that it would have been obvious to one of ordinary skill in the art to substitute an ascorbic acid for the oxygen scavenger in the laminate taught in Koyama because it is functionally equivalent to the metal oxide utilized in Koyama. Furthermore, the Examiner states that it would have been obvious to one of ordinary skill in the art to incorporate a zeolite into the EVOH blend layer of the laminate taught in Koyama in order to prevent the migration of oxygen scavenging byproducts. Applicants traverse this rejection as follows.

Koyama merely discloses that the oxygen absorbing resin is a blend comprising a vinyl alcohol polymer and an olefin resin in a weight ratio of 1:99-90:10 (Claim 2), and an oxygen scavenger is incorporated in the blend (col. 6, lines 18-21). Blinka merely discloses a film that includes an oxygen scavenger and a zeolite. The oxygen scavenger may be selected from the group which includes ascorbates (Claim 1), and the oxygen scavenger is incorporated into a packaging structure (col. 1, lines 40-50).

A combination of the Koyama and Blinka teachings would not arrive at the three component resin composition of the present invention. Neither of these cited prior art teach the unique aspects of the present invention: the decrease in the oxygen barrier characteristics of component B and the increase in the oxygen absorbing characteristics of component A which occur only when the resin composition of the present invention comes into contact with aqueous liquid foods. Thus, while the combination of Koyama and Blinka may be functionally similar to the claimed invention, the structural elements differ dramatically. Therefore, the cited art does not provide the motivation to combine these elements to arrive at the present

invention. Since the combination asserted by the Examiner would not have successfully arrived at the present invention, Applicants request that the objection be withdrawn.

B . The Examiner rejected Claims 12 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Koyama et al. (Pat. No. 5,274,024) in view of Blinka et al. (Pat. No. 5,834,079) as applied in claims 1, 3 and 5-8 above, and further in view of Moritani et al. (Pat. No. 4,999,229). The Examiner states that it would have been obvious to one of ordinary skill in the art to utilize a polyolefin with a moisture permability of not more than 20g/ml -day as the inner layer of the laminate taught in Koyama because Moritani teaches that laminates with such inner layers possess superior barrier properties. Applicants traverse this rejection as follows.

Moritani merely discloses a three-layer laminate, comprising an inner layer, an intermediate layer and an outer layer. The inner layer is selected from the group consisting of polyolefin, polyamides, and polyesters (col. 9, lines 21-45). Koyama merely discloses that the oxygen absorbing resin is a blend comprising a vinyl alcohol polymer and an olefin resin in a weight ratio of 1:99-90: 10 (Claim 2), and an oxygen scavenger is incorporated in the blend (col. 6, lines 1821). Blinka merely discloses a film which includes an oxygen scavenger and a zeolite. The oxygen scavenger may be selected from the group which includes ascorbates (Claim 1), and the oxygen scavenger is incorporated into a packaging structure (col. 1, lines 40-50).

A combination of the Moritani, Koyama and Blinka teachings would not arrive at the unique three component resin composition of the present invention. None of the cited prior art teaches about the following: the decrease in the oxygen barrier characteristics of component B and the increase in the oxygen absorbing characteristics of component A which occur only when the resin composition of the present invention comes into contact with aqueous liquid foods. Thus, while the combination of Moritani, Koyama, Blinka may be functionally similar to the claimed invention, the structural elements differ dramatically. The structural elements of Claim 12 and 13 depend ultimately upon Claim 1. Therefore, since the cited art does not provide the motivation to combine these elements to arrive at the present invention, and the rejection should be withdrawn. Therefore in light of the preceding remarks, Claims 12 and 13 should not be rejected under 35 U.S.C. § 103(a).

C. Claims 1, 3 and 5-8 were also rejected as being unpatentable over Koyama et al. (Pat. No. 5,274,024) in view of JP-0172416 (assigned to Daiichi Seiyaku Co.) and Teumac et al. (Pat. No. 5,663,223). The Examiner indicates that it would have been obvious to one of ordinary skill in the art to incorporate the

oxygen scavenger taught in Daiichi Seiyaku into the EVOH blend layer of the laminate taught in Koyama in order to enhance the oxygen barrier properties of the laminate.

Applicants traverse the rejections as follows.

Koyama merely discloses that the oxygen absorbing resin is a blend comprising a vinyl alcohol polymer and an olefin resin in a weight ratio of 1:99-90:10 (Claim 2), and an oxygen scavenger is incorporated in the blend (col. 6, lines 18-21). Daiichi Seiyaku merely discloses that an oxygen scavenger comprises a zeolite, either synthetic or natural, which supports one or more ascorbic or araboascorbic acids, their salts or derivatives thereof. The oxygen scavenger is apparently incorporated into the foodstuff that it is protecting. Teumac merely discloses that oxygen scavengers which were once added directly to foodstuff are being incorporated into the food packing container (col. 3, lines 48+). None of the cited prior art teaches about the following: the decrease in the oxygen barrier characteristics of component B and the increase in the oxygen absorbing characteristics of component A which occur only when the resin composition of the present invention comes into contact with aqueous liquid foods. Therefore, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Applicants respectfully assert that one of ordinary skill in the art would not arrive at the present invention by combining the teachings of Koyama, Daiichi Seiyaku and Teumac. As indicated above, the present invention has many unique characteristics not taught by any prior art. Thus, the objections to Claims I and 3, and dependent claims 5-8 should be withdrawn.

D. Claims 12,13,15 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. (Pat. No. 5,274,024) in view of JP-01172416 (assigned to Daiichi Seiyaku Co.) and Teumac et al. (Pat. No. 5,663,223) and further in view of Moritani et al. (Pat. No. 4,999,229). The Examiner states that it would have been obvious to one of ordinary skill in the art to utilize a polyolefin with a moisture permability of not more than 20g/mI -day as the inner layer of the laminate taught in Koyama because Moritani teaches that laminates with such inner layers possess superior barrier properties. Applicants traverse the rejection as follows.

Koyama merely discloses that the oxygen absorbing resin is a blend comprising a vinyl alcohol polymer and an olefin resin in a weight ratio of 1:99-90:10 (Claim 2), and an oxygen scavenger is incorporated in the blend (col. 6, lines 18-21). Daiichi Seiyaku merely discloses than an oxygen scavenger comprises a zeolite, either synthetic or natural, which supports one or more ascorbic or araboascorbic acids,

their salts or derivatives thereof. The oxygen scavenger is apparently incorporated into the foodstuff that it is protecting. Teumac merely discloses that oxygen scavengers which were once added directly to foodstuff are being incorporated into the food packing container (col. 3, lines 48+). Moritani merely discloses a three-layer laminate, comprising an inner layer, an intermediate layer and an outer layer. The inner layer is selected from the group consisting of polyolefin, polyamides, and polyesters (col. 9, lines 21-45).

For the reasons already described above, Claims 12 and 13 which ultimately depend upon Claim 1, are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods.

Claim 15 has been amended to indicate that the composition is directed to a laminate for packaging aqueous liquid foods. As indicated in the background (page 15 lines 3-13), an important feature of the invention is that the laminate for packing aqueous liquid foods comprises a layer made of resin that is prepared by dispersing a porous inorganic compound containing ascorbic acids into hydrophobic thermoplastic resin. The ascorbic acids in the resin layer are stable in the presence of oxygen under dry conditions and normal temperatures. So, it is possible to preserve the above-described function during the storage of the packaging material. However, when filled with aqueous liquid foods, the water component passes through the thermoplastic resin and gradually reaches the supporting porous inorganic compound, whereby the ascorbic acids exhibit an oxygen absorbing function. Therefore, it becomes possible to prevent any degradation of the liquid foods due to the presence of oxygen during storage. Thus, quality is preserved and shelf-life extended when aqueous liquid foods are packaged in a laminate comprising the present composition.

Daiichi Seiyaku discloses porous inorganic compounds containing ascorbic acids. However, Daiichi Seiyaku assumes that ascorbic acids have to be released from porous inorganic compounds to exhibit their oxygen absorbing capability. See attached copy of Japanese and English translation of portions of the same. When the porous inorganic compounds containing ascorbic acids as taught by Daiichi Seiyaku are incorporated in a hydrophobic thermoplastic resin, it is expected that the ascorbic acids would not be released from the porous inorganic compounds. Thus, when the ascorbic acids within the porous inorganic compounds are incorporated in the hydrophobic thermoplastic resin, it is expected that the ascorbic acids would not exhibit any oxygen absorbing capability. Therefore, Applicants believe that another novel feature of the present invention is the incorporation of ascorbic acids into porous inorganic compounds as

described on page 13 lines 3-18. The above mentioned features of Claim 15 are neither disclosed nor suggested in any cited references. Since combining the teaching of all of these cited prior art would not arrive at all of the structural elements of the present invention, the objections to Claims 12, 13, 15 and 16 should be withdrawn.

E. Claims 1, 3, 5-8,10, and I I were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bettle III (Pat. No. 5,320,889) in view of Blinka et al (Pat. No. 5,834,979). The Examiner indicates that it would have been obvious to one of ordinary skill in the art to incorporate an ascorbic acid into the ethylene/EVOHJ blend layer of the laminate taught in Bettle in order to improve the oxygen barrier properties of the package. The Examiner also alleges the it would have been obvious to one of ordinary skill in the art to incorporate a zeolite into the ethylene/EVOH blend layer of the laminate taught in Bettle in order to prevent migration of oxygen scavenging byproducts. Applicants traverse the rejection as follows.

Bettle III merely discloses a laminate comprising an EVOH layer. Blinka merely discloses a film which includes an oxygen scavenger and a zeolite. The oxygen scavenger may be selected from the group which includes ascorbates (Claim 1), and the oxygen scavenger is incorporated into a packaging structure (col. 1, lines 40-50). Claims 5-8, 10 and 11 ultimately depend upon Claim 1. Claim 1 and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. Therefore, the cited art does not provide the motivation to combine these elements to arrive at the present invention. Also as indicated above, the present invention has many unique characteristics not taught by any prior art. Since the teachings of Bettle and Blinka would not be successful in arriving at the present invention, the objection should be withdrawn.

F. Claims 1, 3, 5-8, 10 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bettle III (Pat. No. 5,320,889) in view of JP-0172416 (assigned to Daiichi Seiyaku Co.) and Teumac et al. (Pat. No. 5,663,223). The Examiner indicates that since it is well known that oxygen scavengers can be incorporated in to the layers of polymeric containers, it would be obvious to one skilled in the art to incorporate the oxygen scavenger taught in Daiichi Seiyaku into the ethylene/EVOH blend layer of the laminate taught in Bettle in order to enhance its oxygen barrier properties. Applicants traverse the objection as follows.

Bettle III merely discloses a laminate comprising an EVOH layer. Daiichi Seiyaku merely discloses than an oxygen scavenger comprises a zeolite, either synthetic or natural, which supports one or more ascorbic or araboascorbic acids, their salts or derivatives thereof. The oxygen scavenger is apparently

incorporated into the foodstuff that it is protecting. Teumac merely discloses that oxygen scavengers which were once added directly to foodstuff are being incorporated into the food packing container (col. 3, lines 48+). Thus, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Claims 5-8, 10 and 11 ultimately depend upon Claim 1. Claim 1 and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. Therefore, the cited art does not provide the motivation to combine these elements to arrive at the present invention. Since combining the teaching of all of these cited prior art would not arrive at all of the structural elements of the present invention, the objections should be withdrawn.

G. Claims 1, 3 and 5-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lofgren et al. (Pat. No. 5,133,999) in view of Blinka et al. (Pat. No. 5, 834,079). The Examiner indicates that it would have been obvious to one skilled in the art to incorporate an ascorbic acid into the barrier layer of the laminate taught in Lofgren in order to improve the oxygen permeability of the package. Furthermore, the Examiner states that it would also have been obvious to incorporate a zeolite into the barrier layer of the laminate taught in Lofgren in order to prevent the migration of oxygen scavenging byproducts. Applicants traverse the objections as follows.

Lofgren merely discloses a layer consisting of a mixture of polyethylene and ethylene vinyl alcohol copolymer (col. 4, lines 61-68). Blinka merely discloses a film which includes an oxygen scavenger and a zeolite. The oxygen scavenger may be selected from the group which includes ascorbates (Claim 1), and the oxygen scavenger is incorporated into a packaging structure (col. 1, lines 40-50). Thus, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Claims 5-8, 10 and 11 ultimately depend upon Claim 1. Claim I and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. Thus, the invention is not obvious since combining Lofgren and Blinka would not arrive at all of the structural features of the present application which has many unique characteristics not taught by any prior art. Since the teachings of Lofgren and Blinka would not be successful in arriving at the present invention, the objection should be withdrawn.

H. Claims 1, 3, 4-9, 14 and 17-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lofgren et al. (Pat. No. 5,133,999) in view of JP-01172416 (assigned to Daiichi Seiyaku Co.) and Teumac et al. (Pat. No. 5,663,223). The Examiner indicates that it would have been obvious to one of ordinary skill in the art to incorporate the oxygen scavenger taught in Daiichi Seiyaku into the regrind layer of the laminate taught in Lofgren in order to enhance the laminate's oxygen barrier properties. Applicants traverse the objections as follows.

Daiichi Seiyaku merely discloses than an oxygen scavenger comprises a zeolite, either synthetic or natural, which supports one or more ascorbic or araboascorbic acids, their salts or derivatives thereof. The oxygen scavenger is apparently incorporated into the foodstuff that it is protecting. Lofgren merely discloses a layer consisting of a mixture of polyethylene and ethylene vinyl alcohol copolymer (col. 4, lines 61-68). Teumac merely discloses that oxygen scavengers which were once added directly to foodstuff are being incorporated into the food packing container (col. 3, lines 48+). Thus, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Claims 4-9 ultimately depend upon Claim I. Claim I and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. Thus, the invention is not obvious since combining the cited art would not arrive at all of the structural features of the present

application.

Claims 17-19 ultimately depend upon Claim 14. Claim 14 has been amended to indicate that the composition is directed to a laminate for packaging aqueous liquid foods. As indicated in the background (page 15 lines 3-13), an important feature of the invention is that the laminate for packing aqueous liquid foods comprises a layer made of resin that is prepared by dispersing a porous inorganic compound containing ascorbic acids into hydrophobic thermoplastic resin. The ascorbic acids in the resin layer are stable in the presence of oxygen under dry conditions and normal temperatures. So, it is possible to preserve the above-described function during the storage of the packaging material. However, when filled with aqueous liquid foods, the water component passes through the thermoplastic resin and gradually reaches the supporting porous inorganic compound, whereby the ascorbic acids exhibit an oxygen absorbing function. Therefore, it becomes possible to prevent any degradation of the liquid foods due to

the presence of oxygen during storage. The above mentioned features of Claim 14 are neither disclosed nor suggested in any cited references.

Daiichi Seiyaku discloses porous inorganic compounds containing ascorbic acids. However, Daiichi Seiyaku assumes that ascorbic acids have to be released from porous inorganic compounds to exhibit their oxygen absorbing capability. See attached copy of Japanese and English translation of portions of the same. When the porous inorganic compounds containing ascorbic acids as taught by Daiichi Seiyaku are incorporated in a hydrophobic thermoplastic resin, it is expected that the ascorbic acids would not be released from the porous inorganic compounds. Thus, when the ascorbic acids within the porous inorganic compounds are incorporated in the hydrophobic thermoplastic resin, it is expected that the ascorbic acids would not exhibit any oxygen absorbing capability. Therefore, Applicants believe that another novel feature of the present invention is the incorporation of ascorbic acids into porous inorganic compounds as described on page 13 lines 3-18. Since combining the teaching of all of the cited prior art would not arrive at all of the unique aspects of the present invention, the objections should be withdrawn.

I. Claims 1, 3, 5-8, 9-11, 14 and 17-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Itamura et al. (Pat. No. 5,13 3,999) in view of JP-0 172416 (assigned to Daiichi Seiyaku Co.) and Teumac: et al. (Pat. No. 5,663,223). The Examiner indicates that it since it is well known that oxygen scavengers can be incorporated into the layer of polymeric container, it would have been obvious to one of ordinary skill in the art to incorporate the oxygen scavenger taught in Daiichi Seiyaku into the ethylene/EVOH layer of the laminate taught in Itamura. in order to enhance the laminate's oxygen barrier properties. Applicants traverse the rejection as follows.

Itamura merely discloses that a composition comprises a polyolefin and a saponified product of ethylene-vinyle acetate copolymer (abstract), in a ratio between 65:35 to 99.7:0.3 (col. 4, lines 61-65). The ethylene-vinyl acetate copolymer has a saponification degree of at least 96% (abstract), and the blend may be utilized in laminates (col. 9, lines 1-9). Daiichi Seiyaku merely discloses than an oxygen scavenger comprises a zeolite, either synthetic or natural, which supports one or more ascorbic or araboascorbic acids, their salts or derivatives thereof. The oxygen scavenger is apparently incorporated into the foodstuff that it is protecting. Teumac merely discloses that oxygen scavengers which were once added directly to foodstuff are being incorporated into the food packing container (col. 3, lines 48+). Thus, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Claims 5-11 ultimately depend upon Claim 1. Claim 1 and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. Thus, the invention is not obvious since combining the cited art would not arrive at all of the structural features of the present

application.

Claims 17-19 ultimately depend upon Claim 14. Claim 14 has been amended to indicate that the composition is directed to a laminate for packaging aqueous liquid foods. As indicated in the background (page 15 lines 3-13), an important feature of the invention is that the laminate for

packing aqueous liquid foods comprises a layer made of resin that is prepared by dispersing a porous inorganic compound containing ascorbic acids into hydrophobic thermoplastic resin. The ascorbic acids in the resin layer are stable in the presence of oxygen under dry conditions and normal temperatures. So, it is possible to preserve the above-described function during the storage of the packaging material. However, when filled with aqueous liquid foods, the water component passes through the thermoplastic resin and gradually reaches the supporting porous inorganic compound, whereby the ascorbic acids exhibit an oxygen absorbing function. Therefore, it becomes possible to prevent any degradation of the liquid foods due to the presence of oxygen during storage. The above mentioned features of Claim 14 are neither disclosed nor suggested in any cited references.

Daiichi Seiyaku discloses porous inorganic compounds containing ascorbic acids. However, Daiichi Seiyaku assumes that ascorbic acids have to be released from porous inorganic compounds to exhibit their oxygen absorbing capability. See attached copy of Japanese and English translation of portions of the same. When the porous inorganic compounds containing ascorbic acids as taught by Daiichi Seiyaku are incorporated in a hydrophobic thermoplastic resin, it is expected that the ascorbic acids would not be released from the porous inorganic compounds. Thus, when the ascorbic acids within the porous inorganic compounds is incorporated in the hydrophobic thermoplastic resin, it is expected that the ascorbic acids would not exhibit any oxygen absorbing capability. Therefore, Applicants believe that another novel feature of the present invention is the incorporation of ascorbic acids into porous inorganic compounds as described on page 13 lines 3-18. Since combining the teaching of all of the cited prior art would not arrive at all of the compositional elements of the present invention, the objections should be withdrawn.

J . Claims 1, 3, 5-8, and 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Itamura et al. (Pat. No. 5,133,999) in view of in view of Blinka et al. (Pat. No. 5, 834,079). The Examiner indicates that it would have been obvious to one of ordinary skill in the art to incorporate an ascorbic acid into the regrind layer of the laminate taught in Itamura in order to improve the oxygen permeability of the package. Furthermore, the Examiner states that it would have been obvious to one of ordinary skill in the art to incorporate a zeolite in the regrind layer of the laminate taught in Itamura in order to prevent migration of oxygen scavenging byproducts.

Itamura merely discloses that a composition comprises a polyolefin and a saponified product of ethylene-vinyle acetate copolymer (abstract), in a ratio between 65:35 to 99.7:0.3 (col. 4, lines 61-65). The ethylene-vinyl acetate copolymer has a saponification degree of at least 96% (abstract), and the blend may be utilized in laminates (col. 9, lines 1-9). Blinka merely discloses a film which includes an oxygen scavenger and a zeolite. The oxygen scavenger may be selected from the group which includes ascorbates (Claim 1), and the oxygen scavenger is incorporated into a packaging structure (col. 1, lines 40-50). Thus, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Claims 5-8 and 9-11 ultimately depend upon Claim 1. Claim 1 and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. Thus, the invention is not obvious since combining Itamura and Blinka would not arrive at all of the structural features of the present application. Also as indicated above, the present invention has many unique characteristics not taught by any prior art. Therefore, applicants respectfully request that the objections be withdrawn.

K . Claims 2 and 4 were rejected under 35 U.S.C. 103(a) as being unpatentable over any of the above combination of references and further in view of Hofeldt el al. (Pat. No. 5,204,389). The Examiner indicates that since Hofeldt teaches that an effective amount of ascorbate for the purpose of the oxygen scavenging is between 0.5-10wt%, it would have been obvious to one of ordinary skill in the art to utilize such amounts of ascorbate in the above taught laminates. Applicants traverse the objections as follows.

Hofeldt merely discloses a film for a container closure comprising ascorbates or mixtures thereof (col. 5, lines 3-7). The amount of scavenger is at least 0.5 wt % based on the polymeric matrix material, and it is generally at least 1% (col. 5, lines 51-55). None of the combinations cited above teach that the

oxygen scavenger should be contained in amounts raging from 0.0510wt% of the resinous composition. Therefore, the cited art does not provide the motivation to combine these elements to arrive at the present invention.

Claims 2 and 4 depend upon Claims 1 and 3. Claim 1 and 3 are for a resin composition used in a multi-layer laminate with several unique components. None of the cited prior art discloses an A component kneaded into a B component or that both these components undergo changes when the laminate comes into contact with liquid foods. As already indicated above, a person skilled in the art would not be motivated to combine Daiichi Seiyaku with Lofgren, Itamura, Koyama, Teumac or Hofeldt to obtain all of the compositional features of the present invention. In any case, the combinations asserted would not be successful in arriving at all of the structural elements of claims 2 and 4. Thus, the rejections should be withdrawn.

No additional fees are believed due; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 10-1215.

This Response places all claims in the present application in condition for allowance, and such action is courteously solicited. The Examiner is invited and encouraged to contact the undersigned attorney of record if such contact will facilitate an efficient examination and allowance of the application.

Respectfully submitted,

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Attorney Docket: 13700-0176

Your Ref: 13700-0176
Our Ref: JNTP-27/28-PCT
-U.

Figure

CONCEPT